

Montana Board of Oil and Gas Conservation

Environmental Assessment

Operator: Continental Resources, Inc.

Well Name/Number: Helen 3-19H

Location: SE SW Section 19 T25N R55E

County: Richland, **MT;** **Field (or Wildcat)** W/C (Bakken Horizontal)

Air Quality

(possible concerns)

Long drilling time: No, 30 to 40 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple derrick drilling rig to drill to 19,275'MD/9,834'TVD, single lateral horizontal Bakken Formation well.

Possible H₂S gas production: Slight chance H₂S gas production(Mississippian Formations).

In/near Class I air quality area: No Class I air quality in the area of review.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:

☒ Air quality permit (AQB review)

☒ Gas plants/pipelines available for sour gas

☐ Special equipment/procedures requirements

☐ Other: _____

Comments: No special concerns – using triple rig to drill to 19,275'MD/9,834'TVD, single lateral horizontal Bakken Formation well. If there are existing pipeline for gas in the area then gas must be tied into system or if no gathering system nearby gas can be flared under Board Rule 36.22.1220.

Water Quality

(possible concerns)

Salt/oil based mud: Yes, oil based invert drilling fluids for intermediate casing hole.

Brine water will be used to drill the horizontal lateral. Freshwater and freshwater drilling mud system will be used on the surface hole.

High water table: No high water table anticipated in the area of review.

Surface drainage leads to live water: No, closest drainages are an unnamed ephemeral tributary drainage to East Charlie Creek, about ¼ of a mile to the southeast and about 3/8 of a mile to the northwest from this drilling location.

Water well contamination: No, closest water wells are about 5/8 of a mile to the northwest, about 5/8 of a mile to the southeast and all other wells are 1 mile and further away from this location. Depth of these water wells range from 6' to 140'. Surface hole will be drilled with freshwater and freshwater drilling fluids. Based upon Base of Fox Hills map surface setting depth of 1201', appears to be short. Recommend that surface casing be set to 1392' and steel surface casing set from and cemented from a depth of 1392'.

Porous/permeable soils: No, sandy clay soils.

Class I stream drainage: No Class I stream drainages in the area of review.

Mitigation:

- ☒ Lined reserve pit
- ☒ Adequate surface casing
- ☐ Berms/dykes, re-routed drainage
- ☒ Closed mud system
- ☐ Off-site disposal of solids/liquids (in approved facility)
- ☐ Other: _____

Comments: 1392' of steel surface casing should be set and cemented to surface to protect freshwater zones and cover the Fox Hills aquifer.

Soils/Vegetation/Land Use

(possible concerns)

Stream crossings: No, stream crossings, crossing only ephemeral drainages.

High erosion potential: Yes, moderate cut, up to 15.4' and moderate fill, up to 15.8', required.

Loss of soil productivity: No, location will be restored after drilling, if nonproductive. If productive unused portion of drillsite will be reclaimed.

Unusually large wellsite: No, large 500'X270' location size required.

Damage to improvements: No, slight.

Conflict with existing land use/values: Slight, surface use is a cultivated field and grassland.

Mitigation

- ☐ Avoid improvements (topographic tolerance)
- ☐ Exception location requested
- ☒ Stockpile topsoil
- ☐ Stream Crossing Permit (other agency review)
- ☒ Reclaim unused part of wellsite if productive
- ☐ Special construction methods to enhance reclamation
- ☐ Other: _____

Comments: Access will use existing county road, #326. About 2495' of new road will be built into location off the existing county road. Operator will utilize a closed loop mud system with a lined cuttings disposal pit. Drill cuttings will be disposed of in the lined cuttings pit. Oil based invert drilling fluids will be recycled. Completion fluids will be trucked to a commercial Class II disposal. The lined cuttings pit will be backfilled when dry. No special concerns.

Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: No residences within 1mile and further from this well location.

Possibility of H₂S: Slight chance of H₂S from Mississippian Formations.

Size of rig/length of drilling time: Triple drilling rig/short 30 to 40 days drilling time.

Mitigation:

- ☒ Proper BOP equipment
- ☐ Topographic sound barriers
- ☐ H₂S contingency and/or evacuation plan
- ☐ Special equipment/procedures requirements

___ Other: _____
Comments: Adequate surface casing and operational BOP equipment will mitigate any issues.

Wildlife/recreation

(possible concerns)
Proximity to sensitive wildlife areas (DFWP identified): None identified.
Proximity to recreation sites: None identified.
Creation of new access to wildlife habitat: No
Conflict with game range/refuge management: None in the area.
Threatened or endangered Species: Species identified as threatened by the USFWS are Pallid Sturgeon, Interior Lease Tern, Piping Plover and Whooping Crane. Species listed as candidate species are the Greater Sage Grouse and Sprague's Pipit. NH tracker website for this Township and Range lists only zero (0) species of concern.

Mitigation:

- ___ Avoidance (topographic tolerance/exception)
- ___ Other agency review (DFWP, federal agencies, DSL)
- ___ Screening/fencing of pits, drillsite
- ___ Other: _____

Comments: Private surface lands. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over private surface lands.

Historical/Cultural/Paleontological

(possible concerns)
Proximity to known sites: None identified.
Mitigation
___ avoidance (topographic tolerance, location exception)
___ other agency review (SHPO, DSL, federal agencies)
___ Other: _____

Comments: On private surface lands. There may be possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite. The Board of Oil & Gas has no jurisdiction over private surface lands.

Social/Economic

(possible concerns)
___ Substantial effect on tax base
___ Create demand for new governmental services
___ Population increase or relocation
Comments: Wildcat well.. No concerns

Remarks or Special Concerns for this site

Well is a 19,275'MD/9,834'TVD, single lateral horizontal Bakken Formation well.

Summary: Evaluation of Impacts and Cumulative effects

No long term impacts expected. Some short term surface impacts will occur.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): /s/Steven Sasaki
(title:) Chief Field Inspector
Date: April 3, 2012

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC
website
(Name and Agency)
Richland County water wells
(subject discussed)
April 3, 2012
(date)

US Fish and Wildlife, Region 6 website
(Name and Agency)
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES
MONTANA COUNTIES, Richland County
(subject discussed)

April 3, 2012
(date)

Montana Natural Heritage Program Website (FWP)
(Name and Agency)
Heritage State Rank= S1, S2, S3, T25N R55E
(subject discussed)

April 3, 2012
(date)

If location was inspected before permit approval:
Inspection date: _____
Inspector: _____
Others present during inspection: _____